

**THE UNITED STATES DISTRICT COURT
FOR THE EASTERN DISTRICT OF TEXAS
TEXARKANA DIVISION**

HITACHI MAXELL, LTD.,

Plaintiff,

v.

HUAWEI DEVICE USA INC. AND
HUAWEI DEVICE CO., LTD.,

Defendants.

Civil Action No. 5:16-cv-00178-RWS

JURY TRIAL DEMANDED

DECLARATION OF DR. JONATHAN WELLS, PH.D., M.B.A
REGARDING CLAIM CONSTRUCTION OF
U.S. PATENT NO. 7,203,517

Declaration of Dr. Jonathan Wells
Hitachi Maxell v. Huawei Device USA Inc. et al., 16-cv-178-RWS

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I. INTRODUCTION

1. My name is Dr. Jonathan Wells, and I have been retained by counsel for Huawei Device USA Inc. and Huawei Device Co., Ltd. (“Huawei”) as an expert witness in the above-captioned proceeding to opine on claim construction and indefiniteness issues regarding U.S. Patent Nos. 7,203,517 (the “517 patent”).

2. My opinions are based on my years of education, research and experience, as well as my investigation and study of relevant materials and materials that I was asked to consider (identified below).

3. I may rely upon these materials, my knowledge and experience, or additional materials to respond to arguments raised by Maxell or opinions offered by its experts. Further, I may also consider additional documents and information in forming any necessary opinions, including documents that may not yet have been provided to me.

4. My analysis of the materials produced in this matter is ongoing and I will continue to review any new material as it is provided. This declaration represents only those opinions that I have formed to date. I reserve the right to revise, supplement, or amend my opinions below based on new information and on my continuing analysis of the materials already provided.

5. I am being compensated on a per-hour basis for my time spent working on issues in this case at the rate of \$600 an hour. My compensation does not depend on the outcome of this matter or the opinions that I express.

II. QUALIFICATIONS

6. I am an expert in the field of wireless communications. I have studied, taught, practiced, and researched this field for over thirty years. I summarize in this section my educational background, work experience, and other relevant qualifications. A true and accurate copy of my curriculum vitae is attached as **Appendix A** to my declaration.

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7. I earned my Bachelor of Science degrees in Physics and Physical Electronics with First Class Honors from the University of Bath in 1987. In 1991, I earned my Ph.D. in Microwave Physics from the University of Bath. I earned my Masters of Business Administration with distinction in 1998 from Massey University in New Zealand.

8. From 1990 to 1992, I worked at the University of Bath as a Postdoctoral Research Officer. During this time, I researched and developed novel integrated semiconductor devices, including developing software models to predict the performance of these and other devices. I also taught undergraduate classes and ran laboratory sessions.

9. From 1993 to 1994, I was a Senior Design Engineer at Matra Marconi Space, where I developed integrated electronic components and space-qualified sub-systems for two satellite payloads.

10. From 1994 to 1998, I was employed by MAS Technology (now Aviat Networks) in Wellington, New Zealand; first as a Senior Design Engineer before being promoted to Engineering Group Manager. During this time, I was responsible for hardware development for three families of telecommunication equipment and sustaining development for a family of satellite ground station terminals. I personally designed a wide range of RF devices, and was also responsible for the company's European regulatory approvals.

11. From 1998 to 2000, I was with Adaptive Broadband (now GE Digital Energy) in Rochester, NY, first as an Engineering Group Leader, and then as Director of Wideband Products. In this latter role, I had full profit and loss responsibility for the Terrestrial Infrastructure Group, where I also oversaw the development of a family of digital radios and associated switching and multiplexing equipment.

12. From 2000 to 2004, I was Director of Product Development at Stratex Networks (now Aviat Networks) in San Jose, CA. At Stratex Networks I was responsible for global product

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development of a portfolio of high-end digital microwave radios primarily for cellular applications. I led a development team of 35 engineers, and provided technical leadership of Stratex's flagship Eclipse product.

13. From 2005 to 2007, I was Director of Product Management and Global Regulatory Affairs at GigaBeam Corporation in Herndon, VA. At GigaBeam, I was responsible for overall product strategy for a novel, industry-transforming wireless communication product. During this time, I had responsibility for establishing a global regulatory framework for this new product, which included developing FCC, CEPT, and ETSI standards to cover the specification and regulation of the system. I participated in multiple FCC, CEPT, and ETSI standard setting meetings, and personally met multiple times with over a dozen different international regulatory bodies to help setup wireless regulations within their countries.

14. I have been Managing Partner of AJIS Consulting since 2007. As an independent consultant, I provide expertise on various aspects of wireless communications, including, but not limited to, cellular technologies, wireless devices, network infrastructure, and wireless rules and regulations. In that capacity, I have undertaken multiple projects consulting on these topics, as well as analyzing patents and commercial equipment, for a variety of clients in the communications industry. I have conducted a number of technical workshops on various aspects of wireless technology, including cellular networks, mm-wave radios, security sensors and short range radios. I have also helped public companies, private entities and startups with product development and marketing strategies for wireless products.

15. I have written multiple books, industry reports and journal and conference papers, most of which focus on wireless communications system. For example, I am the author of "*Multi-Gigabit Microwave and Millimeter-Wave Wireless Communications*" (Artech House, 2010). I have authored four comprehensive industry reports on cellular connectivity for Mobile Experts. I have lectured as

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part of undergraduate programs at UC Berkeley, Carnegie Mellon University, and University of Bath, and have given over two dozen lectures and conference presentations on topics germane to wireless communications.

16. I am a named inventor on the following issued patents and patent applications:

- US Patent 7,623,829: Transceiver power detection and control architecture;
- US Patent 7,236,745: Transceiver power detection architecture;
- European Patent EP 1599952: Transceiver power detection architecture; and
- European Patent WO2004080035: Transceiver power detection architecture.

17. I have been a member of the Institute of Electrical and Electronic Engineers (“IEEE”) since 1995 and a Senior Member of IEEE since 1999. I am also a Member of the IEEE Communications Society and the IEEE Microwave Theory and Techniques Society. I was a reviewer for the U.S. Government’s Broadband Technology Opportunity Program and the Broadband Initiatives Program, both part of American Recovery and Reinvestment Act of 2009. I have been a Chair or Co-Chair of numerous technology workshops and symposia related to wireless communications technology.

III. SCOPE OF OPINION

18. I have been asked to provide my opinions regarding certain claim terms from the ’517 patent that Huawei has asked the Court to construe.

19. This declaration, including the exhibits hereto, sets forth my opinion on this topic.

IV. MATERIALS REVIEWED AND CONSIDERED

20. In connection with my work on this matter, I have reviewed and considered the materials identified in **Appendix B** to my declaration.

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21. I also have relied on my academic and professional experience in reaching the opinions expressed in this declaration.

V. LEVEL OF ORDINARY SKILL IN THE ART

22. For the purposes of rendering the opinions set forth in this declaration, I was asked to consider the patent claims and the prior art through the eyes of a person of ordinary skill in the art (“POSITA”) as described by Hitachi Maxell in its opening brief. I understand that Hitachi Maxell stated that a POSITA as of the time of the ’517 patent would be “someone with a working knowledge of wireless communications. The person would have gained this knowledge through an undergraduate Bachelor of Science degree in Electrical Engineering or an equivalent degree, and at least two years of experience working in the field of wireless communications.” Dkt. 95 at 26. For the purposes of claim construction, I agree with this definition of a POSITA for the ’517 patent. I also agree that “[f]or all of the levels of ordinary skill in the art ... it is understood that additional education or experience may serve as a substitute for the defined requirements.” Dkt. 95 at 7 n.6.

VI. LEGAL PRINCIPLES

A. General Principles of Claim Construction

23. The legal principles set forth in this section were provided to me by Huawei’s counsel. I am informed that a purpose of claim construction is to determine the meaning and scope of patent claims asserted to be infringed. I understand that in district court litigation patent claims are generally given the meaning that the terms would have to a person of ordinary skill in the art in question as of the earliest claimed priority date.

24. I understand that the person of ordinary skill in the art is deemed to read the claim term not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification. I further understand that when construing the claims of a patent, the principal considerations are the plain language of the claim (including the

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surrounding claim language and context), the patent specification and the prosecution history (if in evidence), which I understand are called, collectively, the “intrinsic evidence.” I understand that while a claim is to be read in light of the specification, one must generally avoid importing limitations into the claim from the specification. I am also informed that the prosecution history can often inform the meaning of the claim by demonstrating how the inventor understood the invention and whether the inventor limited the invention in the course of prosecution, making the claim scope narrower than it would otherwise be.

B. “Means Plus Function” Terms

25. I understand that a claim limitation may be expressed as a means or step for performing a specified function without reciting structure, material, or acts in support thereof, and that these claims shall be construed to cover the corresponding structure, material, or acts described in the specification and equivalents thereof. I further understand that a structure in the specification can qualify as a “corresponding structure” only if the specification clearly links that structure to the function specified in the claim. I understand that features that do not actually perform the recited function, or are unnecessary to perform the claimed function or merely enable the pertinent structure to operate as intended, do not constitute corresponding structure and so do not serve as claim limitations. I understand that if a corresponding structure for a means-plus-function element cannot be identified in the specification, then the claim is indefinite.

26. I am further informed that in the context of computer-implemented inventions (such as claims that recite processes that are performed by software running on a computer), the “corresponding structure” in the specification cannot simply be a general purpose computer or microprocessor; instead, the structure is a specific algorithm for performing the claimed function. I am further informed that even where a specification discloses a physical structure for performing the

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function (such as a general purpose computer), the claim will be invalid as indefinite if the specification fails to disclose the algorithm for performing the recited claim function.

27. I understand that when a claim limitation lacks the word “means,” there is a presumption that the limitation is not a means-plus-function element. But I also understand that this presumption may be overcome if the limitation in question fails to recite sufficiently definite structure (such as a “nonce” word), or else recites function without reciting sufficient structure for performing that function.

C. Indefiniteness

28. I understand that a claim is indefinite if, when read in light of the specification and its prosecution history, the claim fails to inform, with reasonable certainty, those skilled in the art about the scope of the claimed invention.

VII. PRIORITY DATE OF THE '517 PATENT

29. I have been asked to assume that the earliest possible priority date for the '517 patent is August 1, 2002. I have therefore analyzed the claim constructions and knowledge of one of ordinary skill for this patent as of that date.

VIII. OVERVIEW OF THE '517 PATENT

A. Summary of the '517 Patent

30. The patent describes a mobile communication device that has multiple physical interfaces, such as Wi-Fi or cellular, for communication. The patent states that prior-art methods for switching between interfaces were unstable and would too-frequently switch when the device was moving. '517 patent, 1:33-50. The '517 patent purports to stabilize switching algorithms by analyzing the device's position and moving speed before changing interfaces. *Id.*, 1:58-64.

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B. Prosecution History of the '517 Patent

31. I have reviewed the prosecution history of the '517 patent. The '517 patent was filed on May 20, 2010, as application number 10/625,723, and claims priority to Japanese Application No. 2002-224324, filed on August 1, 2002.

32. The '517 patent received one office action rejection during examination. That rejection found some, but not all, of claims pending examination anticipated by U.S. Patent No. 6,185,413 ("Mueller) and obvious over Mueller in view of U.S. Patent No. 6,122,514 ("Spauer"). *See* 4/18/2006 Office Action, 2-7. The Examiner found that the dependent claims containing the limitations of "wherein said selection switching determination unit waits a longer time until switching of said physical interface when said movement determination unit determines the moving speed being faster," "wherein said selection switching determination unit selects one of a plurality of priorities for said first or second physical interface in accordance with the moving speed determined by said movement determination unit," and "a priority setting unit for setting a priority of said selection switching determination of said first or second physical interface in said selection switching determination unit" were not found in the prior art of record. *See* 4/18/2006 Office Action, 7-8.

33. In response, the Applicant amended the claims to make the allowable dependent claims independent claims. *See* 07/19/2006 Applicant Amendment, 2-6. The Examiner subsequently issued a Notice of Allowability. *See* 07/27/2006 Notice of Allowability.

C. The Asserted Claims of the '517 Patent (1-5, 9, and 10)

34. I understand that Hitachi Maxell has asserted seven claims from the '517 patent against Huawei. Two of those claims, claims 1 and 9 are independent claims and claims 2-5 depend on claim 1 and claim 10 depends on claim 9. I also understand that all of the claims are apparatus claims.

35. **Claim 1:** Claim 1, the first independent claim, is reproduced below:

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1. A mobile communication terminal device having a first physical interface for making a communication to the outside, a second physical interface different in scheme from said first physical interface, and a selection switching determination unit for selecting one from said first and second physical interfaces to switch to a selected physical interface, said mobile communication terminal device comprising:

a communication determination unit for determining whether or not each of said first and second physical interfaces is available for a communication;

a movement determination unit for determining a moving speed of said mobile communication terminal device; and

a position detection unit for detecting a position of said mobile communication terminal device,

wherein said selection switching determination unit makes a selection switching based on the communication availability determined by said communication determination unit, the moving speed determined by said movement determination unit, and the position detected by said position detection unit, and

wherein said selection switching determination unit waits a longer time until switching of said physical interface when said movement determination unit determines the moving speed being faster.

36. **Claims 2-5:** Claims 2-5 depend on claim 1. Claim 2 adds the limitation of “wherein said position detection unit acquires information on the position from outside.” Claim 3 adds the limitation of “an output unit for notifying a user of said first or second physical interface which is in use.” Claim 4 adds the limitation of “an output unit for notifying a user of the communication availability determined by said communication determination unit.” Claim 5 adds the limitations of “a memory for storing the position detected by said position detection unit, and a physical interface used at said position,” and “a memory for storing the position detected by said position detection unit, and a physical interface used at said position.”

37. **Claims 9:** Claim 9, is the second independent claim asserted by Maxell, and is reproduced below:

9. A mobile communication terminal device having a first physical interface for making a communication to the outside, a second physical interface different in scheme from said first physical interface, and a selection switching determination unit for selecting one from said

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first and second physical interfaces to switch to a selected physical interface, said mobile communication terminal device comprising:

a communication determination unit for determining whether or not each of said first and second physical interfaces is available for a communication;

a movement determination unit for determining a moving speed of said mobile communication terminal device;

a position detection unit for detecting a position of said mobile communication terminal device,

wherein said selection switching determination unit makes a selection switching based on the communication availability determined by said communication determination unit, the moving speed determined by said movement determination unit, and the position detected by said position detection unit; and

a priority setting unit for setting a priority of said selection switching determination of said first or second physical interface in said selection switching determination unit.

38. **Claim 10.** Claim 10 depends on claim 9. Claim 10 adds the limitation of “an output unit for notifying a user of the communication availability determined by said communication determination unit.”

IX. CLAIM CONSTRUCTIONS FOR THE '517 PATENT

39. I have been asked to provide opinions about the claim limitation of “selection switching determination unit” as it pertains to claim 1 of the '517 patent. I have carefully reviewed the proposed claim constructions offered by Huawei and Maxell for this term, as well as Maxell's arguments and citations in its claim construction briefing for this term. In the sections below, I provide my opinions as to how the terms at issue would have been understood by a person of ordinary skill in the art as of the priority date of the '517 patent.

A. “selection switching determination unit” (claim 1)

40. In my opinion, the limitation of “selection switching determination unit” from claim 1 is a means-plus-function term, and the '517 patent fails to describe structure (e.g., any algorithm) for performing the claimed functions. Therefore, notwithstanding the presence in the patent of

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functionally-named boxes or blocks, the '517 patent fails to describe any structure to perform those functions.

41. The functions recited in claim 1 that are performed by the “selection switching determination unit” include “selecting one from said first and second physical interfaces to switch to a selected physical interface . . . wherein said selection switching determination unit makes a selection switching based on the communication availability determined by said communication determination unit, the moving speed determined by said movement determination unit, and the position detected by said position detection unit, and wherein said selection switching determination unit waits a longer time until switching of said physical interface when said movement determination unit determines the moving speed being faster.”

42. It is my opinion that one of skill in the art as of the '517 patent's filing date would not understand “selection switching determination unit” to inherently provide structure. Claim 1 only recites “selection switching determination unit” in terms of its function, as described above. The word “unit” is a “nonce” word that does not provide any particular structure, and adding the modifier of “selection switching determination” does not provide any structure for the “unit.” Furthermore, it is my opinion that “selection switching determination unit” was not a term of art used in the wireless communications industry at the time of the filing of the '517 patent.

43. In addition, I note that the '517 patent's specification contains no description of a physical structure for a “selection switching determination unit” that performs the function recited in claim 1. For example, a “switching determination unit” is denoted as a box in Figures 1, 2, 5, 7, 8, and 11 and the corresponding portions of the specification only describe the functions performed by the “switching determination unit.” *See, e.g.* '517 patent, 3:53-61. Figures 3 and 10 do not show a “switching determination unit” at all.

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44. The only portions of the specification in the '517 patent that could be considered structure for the “selection switching determination unit” do not provide disclosure of the structure needed to perform the entirety of the function recited in claim 1. In particular, Figures 4, 6, and 9 do not describe structure for “wherein said selection switching determination unit waits a longer time until switching of said physical interface when said movement determination unit determines the moving speed being faster.” To the extent these portions of the '517 patent disclose structure for this claim limitation at all, these portions of the specification only disclose structure for selecting an interface based on the device's moving speed, but do not disclose modifying the waiting time before selecting an interface based on the device's moving speed. To a person of ordinary skill as of the '517 patent's priority date, (a) selecting an interface based on moving speed is different than (b) switching an interface after waiting a certain amount of time based on moving speed. The first means that the moving speed determines the interface; the second means that the moving speed determines how long the device waits to change interfaces. These can be used in conjunction--once the device has tentatively decided to switch interfaces, it can be set to wait a fixed amount of time--but these two settings are not the same thing to a person of ordinary skill in the art.

45. Figures 4 and 9, for example, only show a determination of whether or not the mobile device is moving or stationary and using that determination to select an interface (e.g. steps S407 and S910, respectively). They do not contain any indication of adjusting the waiting period before selecting an interface based on whether the device is moving faster or slower. *See* '517 patent, Figs. 4, 9, 6:45-61, 9:59-10:3.

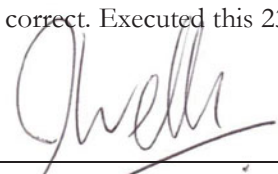
46. Figure 6, on the other hand, does include a step that considers movement speed to select an available interface (e.g. step S407-1), but there is no portion of the specification related to this step that discloses adjusting the period of time waited based on the moving speed before making the selection. *See* '517 patent, Fig. 6, 7:44-67. Figure 6 merely shows selecting an interface

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based on either high or low speed, and provides no disclosure of a structure to adjust the waiting time based on the device's relative speed before selecting an interface.

* * *

I declare under penalty of perjury that the foregoing is true and correct. Executed this 23rd day of October, 2017.



Dr. Jonathan Wells

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APPENDIX A

(Curriculum Vitae)

Jonathan Wells, Ph.D., M.B.A.

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Wireless Communications Expertise

- Cellular Networks (2G, 3G, 4G, 5G, IS-95, GSM, GPRS, EDGE, UMTS, CDMA, WCDMA, HSPA, LTE and LTE-Advanced)
- Cellular Infrastructure (Handsets, Base Stations, Backhaul and RANs)
- Wireless LANs (Wi-Fi and Bluetooth)
- Wireless Standards, Rules and Regulations (3GPP, 3GPP2, IEEE, FCC, ETSI, CEPT)
- Radio Frequency (RF), Microwave and MM-Wave Devices, Systems and Networks
- RF Design, including RF Assemblies, Components and Integrated Circuits (ICs, MMICs)
- Intellectual Property, Patent Analysis and Litigation Support

Professional Summary

Dr. Wells has 30 years of wireless communications experience gained from working in three continents. He is currently an independent consultant providing expertise on cellular technologies, wireless devices, network infrastructure and wireless rules and regulations to a client base of attorneys, intellectual property organizations, investment and research institutions, public listed and private companies. Dr. Wells has over 40 academic and commercial publications and presentations, and is lead inventor on several patents. He is Senior Member of the IEEE and is author of "Multi-Gigabit Microwave and Millimeter-Wave Wireless Communications," Artech House, 2010.

Employment History

2007 to present **AJIS Consulting, Pleasanton, CA** *Independent Consultant*

Provide independent technical consulting on wireless communications and emerging wireless fields.

- Technical expert support of 2G, 3G and 4G cellular and wireless patent litigation.
- Analysis of cellular and mobile wireless patents and infringing equipment.
- Cellular and wireless technology technical and industry analysis for companies, analysts and investment institutions. Research and publication of analyst reports.
- Wireless product development and marketing strategies.
- Specialized technical workshops on various wireless technologies; including cellular networks, mm-wave radios, security sensors and short range radios.
- Specialized global regulatory tasks and product approvals.

Curriculum Vitae: Dr. Jonathan Wells +1 (925) 200 5124

2005 to 2007 **GigaBeam Corporation, Herndon, VA**
Director Product Management and Global Regulatory Affairs

Responsible for product strategy for industry-transforming high data rate wireless product.

- Initiated market development in over 40 countries including in Europe, Canada, Caribbean, Latin America, Middle East and Asia.
- Participated and drove standard development in FCC, CEPT and ETSI technical meetings.

2000 to 2004 **Stratex Networks (now Aviat Networks), San Jose, CA**
Director Product Development

Responsible for global product development of high-end digital microwave radios primarily for cellular backhaul applications.

- Led RF/microwave development team of 35 engineers based in two continents.
- Technical leadership of flagship Eclipse product, shipping over 250,000 units.
- Technical management of overseas manufacturing subcontractors.

1998 to 2000 **Adaptive Broadband (now GE Digital Energy), Rochester, NY**
1999-2000: Director Wideband Products, 1998-9: Engineering Group Leader

Full responsibility for the Terrestrial Infrastructure Group, providing telecommunications products for cellular and private network applications.

- P&L responsibility for \$4M wireless division.
- Responsible for the development of a family of digital radios and associated switching / multiplexing equipment.

1994 to 1998 **MAS Technology (now Aviat Networks), Wellington, New Zealand**
1995-98: RF Group Manager, 1994-95: Senior RF Design Engineer

Responsible for RF hardware development for cellular and telecommunications applications.

- Developed three generations of wireless transmission, switching and multiplexing products.
- Design and sustaining responsibility for satellite ground station terminals.
- Responsible for company's European regulatory approvals.

1993 to 1994 **Matra Marconi Space, Portsmouth, UK** *Senior Design Engineer*

- Developed GaAs MMIC mixer and MIC transmitter board for two satellite payloads.
- Theoretical analysis and modeling of low noise VCOs.

1990 to 1992 **University of Bath, Bath, UK** *Post Doctoral Research Officer*

- Fabricated novel quantum amplifiers in clean room environment.
- Developed computer models to predict semiconductor device performance.

1987 to 1990 **British Aerospace, Filton, Bristol, UK** *Engineer (part time)*

- Designed and fabricated novel mixer devices, to support PhD research.

1985 to 1986 **Plessey Research, Caswell, UK** *Engineer (1 year placement)*

- Developed high speed fiber optic transmitter / receiver devices.

Curriculum Vitae: Dr. Jonathan Wells +1 (925) 200 5124

Education

- 1998 M.B.A., awarded with Distinction, Massey University, New Zealand
- 1991 Ph.D., Microwave Physics (sponsored by British Aerospace), University of Bath, United Kingdom
- 1987 B.Sc., Physics with Physical Electronics, awarded with First Class Honours, University of Bath, United Kingdom

University Instruction

- 2014 Intellectual Property: Patent Law, Prof. Mark Lemley, Stanford Law School, Stanford University, CA, USA
- 2004 AeA/Stanford Executive Institute for Management of High-Technology Companies, Stanford Graduate School of Business, Stanford University, CA, USA

Non-Confidential Expert Witness Experience

- Aug 2017 to Present *Optis Wireless v. Huawei*, 2:17-cv-00123-JRG
Case: Patent case related to three cellular patents.
Role: Consulting expert for defendant.
- Aug 2017 to Present *Securus v. Global Tel*Link*, PGR2017-00005
Case: Post grant review proceeding related to one wireless communication patent.
Role: Technical expert for patent owner. Provided declaration.
- June 2017 to Present *Hitachi Maxell v. Huawei*, 5:16-cv-00178-RWS
Case: Patent case related to three cellular and cellular / Wi-Fi patents.
Role: Consulting expert for defendant.
- Nov 2016 to Present *Apple v. Qualcomm*, 3:17-cv-00108
Case: Case related to licensing of cellular and wireless patents.
Role: Consulting expert for plaintiff.
- Apr 2016 to Present *Huawei v. T-Mobile*, 2:16-cv-00055, 2:16-cv-00056
Case: Patent case related to five cellular and cellular / Wi-Fi handover patents.
Role: Testifying expert for plaintiff. Provided five Expert Reports and supplements. Deposed twice.
- Feb 2016 to July 2016 *Unwired Planet v. Huawei and Samsung*, UK High Court, HP-2014-000005
Case: UK patent court case related to four European 2G, 3G and 4G/LTE cellular communication patents.
Role: Testifying expert for defendant. Provided two Expert Reports.

Curriculum Vitae: Dr. Jonathan Wells +1 (925) 200 5124

Jan 2016 to April 2017	<i>Apple, Microsoft et al v. Evolved Wireless</i> , IPR2016-00981, IPR2016-01177, IPR2016-01185, IPR2016-01208/01209, IPR2016-01228/01229 Case: <i>Inter Partes Reviews</i> of five wireless communication patents. Role: Technical expert for petitioners. Provided five declarations. Deposed four times.
July 2015 to June 2016	<i>Ericsson v. Intellectual Ventures</i> , IPR2015-01367 Case: <i>Inter Partes Review</i> of a wireless communication patent. Role: Technical expert for patent owner. Provided declaration. Deposed.
July 2015 to Feb 2016	<i>Core Wireless v. LG, Google et al</i> , 2:14-cv-00911 and 00912 Case: Patent case related to location using cellular devices. Role: Testifying expert for defendants. Provided Expert Report.
May 2015 to May 2016	<i>Adaptix v. Ericsson et al</i> , 6:14-cv-00501, 00502 and 00503, 6:15-cv-00042 Case: Patent case related to three 4G/LTE communication patents. Role: Testifying expert for plaintiff. Provided two Expert Reports and multiple declarations.
May 2015 to Dec 2015	<i>Adaptix v. Alcatel-Lucent et al</i> , 6:15-cv-00041 Case: Patent case related to three 4G/LTE communication patents. Role: Testifying expert for plaintiff.
April 2015 to Dec 2015	<i>Ericsson v. Apple</i> , ITC Inv. No. 337-TA-952 Case: ITC hearing related to Bluetooth and cellular / Wi-Fi device patents. Role: Testifying expert for respondent. Provided two Expert Reports and two Witness Statements. Deposed. Testified at hearing.
Dec 2014 to Sept 2015	<i>Ericsson v. Intellectual Ventures</i> , IPR2014-01471 Case: <i>Inter Partes Review</i> of a wireless communication patent. Role: Technical expert for patent owner. Provided declaration. Deposed.
Dec 2014 to Sept 2015	<i>Ericsson v. Intellectual Ventures</i> , IPR2014-01412 Case: <i>Inter Partes Review</i> of a wireless communication patent. Role: Technical expert for patent owner. Provided declaration. Deposed.
Nov 2014 to Present	<i>Regents of the University of Minnesota v. AT&T et al</i> , 0:14-cv-4666 Case: Patent case related to five 4G/LTE communication patents. Role: Consulting expert for plaintiff.
Oct 2014 to Aug 2015	<i>Ericsson v. Intellectual Ventures</i> , IPR2014-01330 Case: <i>Inter Partes Review</i> of a wireless communication patent. Role: Technical expert for patent owner. Provided declaration. Deposed.
Sept 2014 to May 2015	<i>Ericsson v. Intellectual Ventures</i> , IPR2014-00963 Case: <i>Inter Partes Review</i> of a wireless communication patent. Role: Technical expert for patent owner. Provided declaration. Deposed.

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Sept 2014 to Oct 2014	<i>Ericsson v. <u>TCL Communication Technology Holdings</u>, 2:14-cv-677</i> Case: Patent case related to a 4G/LTE communication patent. Role: Consulting expert for defendant.
Sept 2014 to Sept 2014	<i>Ericsson v. <u>Intellectual Ventures</u>, IPR2014-00958</i> Case: <i>Inter Partes Review</i> of a wireless communication patent. Role: Technical expert for patent owner.
Jan 2014 to Aug 2014	<i><u>Cell and Network Selection</u> v. <u>AT&T et al</u>, 6:13-cv-00403</i> Case: Patent case related to a 4G/LTE communication patent. Role: Testifying expert for plaintiff.
Jan 2014 to Jan 2015	<i><u>Cell and Network Selection</u> v. <u>MetroPCS et al</u>, 6:13-cv-00404</i> Case: Patent case related to a 4G/LTE communication patent. Role: Testifying expert for plaintiff. Provided two Expert Reports. Deposed.
Jan 2014 to Mar 2016	<i><u>Adaptix</u> v. <u>Ericsson et al</u>, 6:12-cv-00049, 00050 and 00369</i> Case: Patent case related to three 4G/LTE communication patents. Role: Testifying expert for plaintiff. Provided two Expert Reports. Deposed.
Jan 2014 to Dec 2015	<i><u>Adaptix</u> v. <u>Alcatel-Lucent et al</u>, 6:12-cv-00022, 00122 and 00123</i> Case: Patent case related to three 4G/LTE communication patents. Role: Testifying expert for plaintiff. Provided two Expert Reports. Deposed. Testified at trial.
Oct 2013 to Jan 2014	<i>Ericsson v. <u>Samsung</u>, 6:12-cv-00894 and 00895</i> Case: Patent case related to 24 wireless communication patents. Role: Testifying expert for defendant.
June 2013 to Dec 2013	<i><u>Adaptix</u> v. <u>Ericsson</u>, ITC Inv. No. 337-TA-871</i> Case: ITC hearing related to 4G/LTE wireless communication patent. Role: Testifying expert for complainant. Provided Expert Report and Witness Statement. Deposed.
Mar 2013 to Sept 2014	<i><u>Mobile Telecommunication Technologies</u> v. <u>BlackBerry</u>, 3:12-cv-01652</i> Case: Patent case related to five wireless communications patents. Role: Consulting expert for plaintiff.
Mar 2013 to Dec 2013	<i><u>Mobile Telecommunication Technologies</u> v. <u>Sprint</u>, 2:12-cv-00832</i> Case: Patent case related to five wireless communications patents. Role: Consulting expert for plaintiff.
Jan 2013 to May 2014	<i><u>TracBeam</u> v. <u>Google</u>, 6:13-cv-00093</i> Case: Patent case related to two cellphone location patents. Role: Testifying expert for defendant. Provided two Expert Reports. Deposed.

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Jan 2013 to Sept 2013	<i>Ericsson v. <u>Samsung</u></i> , ITC Inv. No. 337-TA-862 Case: ITC hearing related to seven 2G, 3G, 4G/LTE and Wi-Fi patents. Role: Testifying expert for respondent. Provided two Expert Reports and two Witness Statements. Deposed. Testified at hearing.
Jan 2013 to June 2013	<i><u>EON</u> v. <u>AT&T et al</u></i> , 3:11-cv-01555 Case: Patent case related to wireless communications patent. Role: Consulting expert for plaintiff.
Nov 2012 to Oct 2013	<i><u>Cormany et. al. v. Fireman's Fund Insurance Company</u></i> , CIVDS1100146 Case: Breach of contract case involving location via cell phone. Role: Testifying expert for plaintiff. Provided technical analyses. Deposed.
Oct 2012 to Dec 2012	<i><u>Drivertech v. R+L Carriers</u></i> , 2:08-cv-00862 Case: Patent case related to wireless communications patent. Role: Consulting expert for defendant. Provided technical analyses.
May 2012 to April 2013	<i><u>Sparkes Cable Company v. Rancho San Antonio Retirement Housing Corp.</u></i> , 112-cv-225390 Case: Breach of contract related to telecommunications network. Role: Consulting expert for defendant. Provided technical analyses.
April 2012 to Sept 2012	<i><u>EON</u> v. <u>T-Mobile et al</u></i> , 6:10-cv-00379 Case: Patent case related to wireless communications patent. Role: Testifying expert for plaintiff. Provided Expert Report and Declarations. Deposed.
March 2012 to April 2012	<i><u>Baker v. SLG Group</u></i> , CV-2010-901219 Case: Civil case involving location via cell phone. Role: Consulting expert for plaintiff. Provided technical analyses.
Sept 2011 to July 2012	<i><u>Samsung v. Apple</u></i> , CV 11-02079 Case: Patent case related to 3G WCDMA patent. Role: Consulting expert for defendant. Provided technical analyses.
Mar 2011 to July 2013	<i><u>Wi-LAN v. Alcatel-Lucent et al</u></i> , 6:10-cv-00521 Case: Patent case related to four 3G HSDPA patents. Role: Testifying expert for plaintiff. Provided two Expert Reports, Supplement to Expert Report and Declarations. Deposed. Testified at trial.
Oct 2010 to Jan 2011	<i><u>People of the State of California v. Wandrey</u></i> , CR920809 Case: Criminal murder case involving location via cell phone. Role: Consulting expert for defendant. Provided technical analyses.
Sept 2010 to Oct 2010	<i><u>People of the State of California v. Tran</u></i> , CC826024 Case: Criminal murder case involving location via cell phone. Role: Consulting expert for defendant. Provided technical analyses.

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- May 2010 to Apr 2011 *People of the State of California v. Rivas & Carrillo*, SS090603A/B, SS110071A/B
Case: Criminal murder case involving location via cell phone.
Role: Testifying expert for defendant. Provided Expert Report. Testified at trial.
- June 2009 to June 2010 *American Traffic Solutions v. Redflex Traffic Systems*, CV 08-2051-PHX
Case: Unfair competition related to FCC authorization of speed radars.
Role: Testifying expert for plaintiff. Provided Expert Report, Supplement to Expert Report and Declarations.

Professional Affiliations and Achievements

- 2011 – Present Toastmasters International. Awarded Distinguished Toastmaster (DTM)
- 2008 – Present Member, IEEE Consultants' Network of Silicon Valley (CNSV).
(Treasurer, 2017, Vice-chair, 2015-16, Treasurer, 2013-14; Co-chair, Intellectual Property Special Interest Group, 2010-12)
- 1995 – Present Senior Member, Institute of Electrical and Electronic Engineers (IEEE).
(Senior Member since 1999; Member, IEEE Communications Society; Member, IEEE Microwave Theory and Techniques Society)
- 2016 Interviewed as Telecommunications Expert by CNN affiliate on national TV.
- 2013 Guest speaker, UC Berkeley course IEOR 190G: Wireless and Mobile Devices Patents – Patent Engineering
- 2011 – 2012 Technical Reviewer, Wireless and Cellular Communication Systems, International Microwave Symposium (IMS2011 and IMS2012)
- 2010 Guest speaker, Carnegie Mellon University (CMU) course 96-833: Fundamental Consulting Skills
- 2009 Reviewer for US Government's Broadband Technology Opportunity Program (BTOP) and Broadband Initiatives Program (BIP), part of American Recovery and Reinvestment Act of 2009
- 2009 Selected Expert Advice columnist for Microwave Journal
- 2009 Organizer and session chair, International Microwave Symposium (IMS2009)
- 2008 Co-chair and organizer, IWPC workshop on Millimeter-Wave Security Sensors
- 2008 Co-chair, IWPC workshop on Extending the Life of GSM & EDGE Networks
- 2008 Co-chair, IWPC workshop on Wireless IP/Ethernet Backhaul for Next Generation Mobile Networks
- 2002 – 2006 Member and deputy chair, Wireless Communications Association (WCA) 40+ GHz Spectrum Development Committee
- 2001 – 2004 Member, Cal Poly Electrical Engineering Industrial Advisory Committee

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1993 – 2002 Member, Institution of Electronic Engineers (MIEE)
1995 Registered as Chartered Engineer (CEng)

Patents

US 7,623,829, “Transceiver power detection and control architecture,” issued Nov 24, 2009
US 7,236,745, “Transceiver power detection architecture,” issued June 26, 2007
CN 1,757,186, “Transceiver power detection architecture,” published Apr 5, 2006
EP 1,599,952, “Transceiver power detection architecture,” published Nov 30, 2005
WO 2004/080035, “Transceiver power detection architecture,” published Sept 16, 2004

Publications and Presentations

Books and Theses

J.A. Wells, “*Multi-Gigabit Microwave and Millimeter-Wave Wireless Communications*,” Artech House, Boston, Sept. 2010 (ISBN 1608070824)

J.A. Wells, “*Venture Capital: Does It Exist In New Zealand?*” MBA Thesis, Massey University, 1998

J.A. Wells, “*The Design and Optimisation of a Millimetre-Wave Balanced Mixer*,” PhD Thesis, University of Bath, 1991

Television

Nancy Grace, HLN (formerly CNN Headline News), April 27, 2016 (Interviewed as Telecommunications Expert)

Nancy Grace, HLN, April 26, 2016 (Interviewed as Telecommunications Expert)

Published Research Reports

J. Madden and J.A. Wells, “*Backhaul, Midhaul, and Fronthaul for the HetNet*,” Mobile Experts, USA, Dec. 2015

J.A. Wells, “*Backhaul and Fronthaul for the HetNet*,” Mobile Experts, USA, Nov. 2014

J.A. Wells, “*Backhaul for Small Cells*, 2nd Edition” Mobile Experts, USA, Nov. 2012

J.A. Wells, “*Backhaul for Small Cells*,” Mobile Experts, USA, Oct. 2011

Journal and Magazine Publications

J.A. Wells, “The Seven Rules for Hiring a Wireless Technology Expert,” *New Matter; Official Publication of the Intellectual Property Section of the State Bar of California*, Vol. 35, No. 4, pp. 5-6, Dec. 2010

J.A. Wells, “MM-Waves in the Living Room: The Future of Wireless High Definition Multimedia Connectivity,” *Microwave Journal*, Vol. 52, No.8, pp. 72-84, Aug. 2009

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J.A. Wells, "Faster Than Fiber: The Future of Multi-Gb/s Wireless," *IEEE Microwave Magazine*, Vol. 10, No.3, pp. 104-112, May 2009 (Invited Paper)

J.A. Wells, "Multigigabit Wireless Technology at 70, 80 and 90 GHz," *RF Design*, pp. 50-58, May 2006

J.A. Wells, "Gigabit per Second Wireless Backhaul at 70 and 80 GHz for WiMAX Networks," *Focus on Technology* supplement in *Wireless Design and Development*, pp. S6-S8, May 2006

J.A. Wells, "New Multi-Gigabit Wireless Systems Satisfy High Security Rapid Response Applications," *Military Embedded Systems*, Vol. 2, No. 1, pp. 22-26, Spring 2006

J.A. Wells, "Multi-Gigabit Connectivity at 70, 80 and 90 GHz," *Microwave Journal*, pp. 128-135, July 2005

J.A. Wells, "Millimeter Wave Point-To-Point Radios," *Applied Microwave and Wireless*, pp. 81-82, Aug. 2002 (Guest Editorial)

J.A. Wells and N.J. Cronin, "Theoretical Analysis of Air Bridging and Back Etching Techniques on the Shunt Capacitance of Planar Subharmonic Mixer Diodes," *IEE Proceedings - Part H*, Vol. 140, No. 6, pp. 474-80, Dec. 1993

J.A. Wells and N.J. Cronin, "Frequency Dependant Simulation of Planar Millimeter-Wave Mixer Diodes," *17th International Conference on Infra-Red and Millimeter Waves Digest*, USA, pp. 214-5, Dec. 1992

J.A. Wells and N.J. Cronin, "Determination and Reduction of the Capacitance Associated with the Bonding Pads of Planar Millimeter-Wave Mixer Diodes," *IEEE Microwave and Guided Wave Letters*, Vol. 2, No. 7, pp. 297-9, July 1992

J.A. Wells and N.J. Cronin, "Planar Schottky-Diode Devices for Millimetre-Wave Balanced Mixer Applications," *21st European Microwave Conference Digest*, Germany, pp. 370-5, Sept. 1991

N.J. Cronin, R. James and J.A. Wells, "Subharmonic Mixers for Short Millimetre Wavelengths," *16th International Conference on Infra-Red and Millimeter Waves Digest*, Switzerland, p. 143, Aug. 1991

J.A. Wells, N.J. Cronin and P.H. Reece, "A Rugged 94GHz Crossbar Balanced Mixer," *IEE Proceedings - Part H*, Vol. 137, No. 4, pp. 235-7, Aug. 1990

J.A. Wells, N.J. Cronin and P.H. Reece, "A Rugged 94GHz Millimetre-Wave Balanced Mixer," *1st International Conference on Millimeter Waves and Far-Infrared Technology Digest*, China, pp. 254-6, June 1989

Online Publications

J.A. Wells, "Backhaul for small cells: A 1.5 billion dollar market opportunity," *EE Times*, Design Article, Nov. 2011

J.A. Wells, "The Gigabit Millimeter-Wave Superhighway," *Microwave Journal*, Expert Advice Blog, Aug. 2009 (Invited Column)

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Lectures and Conference Presentations

“5G and the Future of Cellular,” *IEEE Consultants’ Network of Silicon Valley*, USA, Mar. 2016

“SON [Self-Organizing Networks]: The Enabling Technology in Small Cell Networks,” *Wireless Communications Alliance (WCA)*, USA, April 2014 (Panel Moderator)

“Feeding the Beast – The Road to 5G Backhaul,” *Wireless Communications Alliance (WCA)*, USA, April 2013 (Invited Panelist)

“The Mobile Patent Wars: An Introduction to the Technology behind the Ongoing Smartphone Litigation,” *UC Berkeley course IEOR 190G: Wireless and Mobile Devices Patents – Patent Engineering*, USA, March 2013

“Mobile Patent Wars,” *IEEE-SCV Communications Society*, USA, May 2012 (Invited Panelist)

“Building a Successful Consulting Practice,” *Carnegie Mellon University (CMU) course 96-833: Fundamental Consulting Skills*, USA, May 2011

“Faster Than Fiber: Enabling Multi-Gigabit Wireless Communication Links,” *IEEE International Microwave Symposium IMS 2009*, USA, June 2009

“The Future of Cellular Infrastructure,” *IEEE Consultants’ Network of Silicon Valley*, USA, Mar. 2009

“Wireless Backhaul Trends: The Future Role of Wireless, Fiber Optics and Copper Wire,” *IEEE-SCV Communications Society*, USA, Oct. 2008

“Millimeter-Wave Sensor Systems Benchmarking for Security Applications,” *IWPC Workshop on MM-Wave Sensors for Layered Security of Critical Infrastructure*, USA, April 2008

“Marketing for Translators and Interpreters,” *Northern California Translators Association Workshop*, USA, Mar. 2007

“WiFiber: New Spectrum Links for Wireless Gigabit Transmission,” *ACM/IEEE conference on Supercomputing SC06*, USA, Nov. 2006

“WiFiber Wireless Fiber: Ultra High Data Rate Radios,” *Wireless Fibre Amsterdam*, The Netherlands, Sept. 2006 (Keynote Speaker)

“Gbps+ Wireless Local Loop: Transforming Last Mile Economics,” *USTA Webinar*, Aug. 2006

“WiFiber: New Spectrum Links for Wireless Gigabit Local Broadband,” *Internet 2 Spring Meeting*, USA, April 2006

“Multi-Gigabit Wireless Backhaul at 70 and 80 GHz for WiMAX Networks,” *PTC’06*, USA, Jan. 2006

“Future Trends in MM-Wave Radios for Wireless Backhaul Applications,” *IWPC Workshop on Millimeter Wave Backhaul and 60 GHz Unlicensed Band Radios*, USA, June 2002

“Millimeter Wave Point-To-Point Radios for Carrier Class Access and Transport Applications,” *8th WCA Technical Symposium Proceedings*, USA, Feb. 2002

“Commercial Opportunities at 94 GHz,” *IEEE MTT-S International Microwave Symposium*, USA, May 2001 (Invited Panelist)

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“Research and Development at MAS Technology,” *New Zealand Communications Research Workshop 1997*, New Zealand, May 1997 (Invited Paper)

“Overcoming RF Technical Difficulties in Moving from QPSK to 16 QAM Modulation,” *New Zealand Communications Research Workshop 1997*, New Zealand, May 1997

“Modern Microwave Technology,” *VHF Convention 1995*, New Zealand, April 1995

“100W 2GHz Linear FET Amplifier Design,” *VHF Convention 1995*, New Zealand, April 1995

“Low Phase Noise Oscillator Design for Wide band Radio Applications,” *4th New Zealand Communications Workshop*, New Zealand, Sept. 1994

“Numerical Modeling of Millimeter-Wave Schottky Diodes,” *2nd UK-Japan N+N Meeting on Terahertz Technology*, Japan, July 1992

“Planar Schottky-Diode Devices for Millimetre-Wave Balanced Mixer Applications,” *21st European Microwave Conference Digest*, Germany, Sept. 1991

“A Rugged 94GHz Millimetre-Wave Balanced Mixer,” *1st International Conference on Millimeter Waves and Far-Infrared Technology Digest*, China, June 1989

Declaration of Dr. Jonathan Wells

Hitachi Maxell v. Huawei Device USA Inc. et al., 16-cv-178-RWS

APPENDIX B

(Materials Considered)

Declaration of Dr. Jonathan Wells

Hitachi Maxell v. Huawei Device USA Inc. et al., 16-cv-178-RWS

Materials considered in the Declaration of Dr. Jonathan Wells

- U.S. Patent No. 7,203,517 (the “’517 patent”);
- Prosecution History of the ’517 patent;
- Maxell’s opening claim construction brief (Dkt. 95);